JOURNAL OF COMBINATORIAL THEORY, Series A 57, 162 (1991)

Corrigendum

Volume **49**, Number 1 (1988), in the article "No Extendable Biplane of Order Nine," by Bhaskar Bagchi, pages 1–12: W. Haemers (oral communication) has observed that the argument in the concluding part of the proof of Proposition 2.7 (which purports to show that equality cannot hold in the inequality dim $C \geqslant 27$) is incorrect because of confusion regarding the domain and range of the transformations used. As a consequence, the proof of the main result is invalidated.

This error can be rectified. Indeed, there is no need to compute or estimate the dimension of C, provided the rest of the argument is modified as indicated below. Thus, except for Lemmas 2.2 and 2.8, the rest of Section 2 can be deleted. This leads to a vastly simplified proof of the non-existence of 3–(57, 12, 2) designs.

Since the ternary code C of a putative 3–(57, 12, 2) design is self-orthogonal, we can choose and fix a maximal self-orthogonal code D containing C. In Section 3 it is shown (correctly) that the minimum weight of $C^{\perp}$ is at least 8, and $C^{\perp}$ has no word of weight 9, 10, or 13. *Since* $D^{\perp} \subseteq C^{\perp}$, *the same is true of* $D^{\perp}$. The proof that $C^{\perp}$ contains no word of weight 8 or 11 breaks down, since it depends on Proposition 2.7. Perhaps this can be re-established by direct computations similar to those used for the weights 9, 10, and 13. In any case, since D is a maximal self-orthogonal ternary code of length 1 (mod 4), Lemma 2.8 implies that $D^{\perp}$ contains no word of weight 2 (mod 3). In particular, it has no word of weight 8 or 11. Thus D is a maximal self-orthogonal ternary linear code of length 57 such that the minimum weight of $D^{\perp}$ is 12 and $D^{\perp}$ contains no word of weight 13. But this contradicts Lemma 4.1, according to which there is no such code. This contradiction proves:

THEOREM. *There is no* 3–(57, 12, 2) *design. Equivalently, there is no strongly regular graph with parameters* $(v, k, \lambda, \mu) = (324, 57, 0, 12)$.

REFERENCE

1. B. BAGCHI, No extendable biplane of order nine, *J. Combin. Theory Ser. A* **49** (1988), 1–12.

Printed in Belgium